

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO. 10/051,070
ATTORNEY DOCKET NO. Q68238

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

40 1/2

1. *(Previously Presented)* A rolling bearing for a hard disk drive comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer ring;
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring

and said outer ring and disposed opposite to each other; and

B1

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

2. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, in which the amount of said lubricating oil is not more than 30% by volume of the to-be-sealed bearing space.

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Chs 3. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, in which the amount of said lubricating oil is in a range of 4-25% by volume of the to-be-sealed bearing space.

Chs 4. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 1, in which said lubricating oil is preliminarily contained in said cage.

B/C 5. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 4, in which an amount of said lubricating oil preliminary contained in said cage is in a range of 0.1-80% by weight of said cage.

C/C 6. *(Previously Presented)* The rolling bearing for a hard disk drive according to claim 5, in which the amount of said lubricating oil preliminary contained in said cage is in a range of 10-70% by weight of said cage.

7. *(Cancelled)*

8. *(Currently Amended)* The rolling bearing for a hard disk drive according to claim 1, wherein a predetermined amount of said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricant oil is prevented from adhering to an external portion of the rolling bearing.

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9. (Previously Presented) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring

Bl
Bx
and said outer ring and disposed opposite to each other; and

a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space

defined between said sealing members at the both ends in the axial direction, wherein the amount

of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and

wherein the kinematic viscosity of the sole lubricant is not more than 400mm²/s.

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10. (*Previously Presented*) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

11. (*Previously Presented*) The hard disk drive according to claim 10, in which the amount of said lubricating oil is not more than 30% by volume of the bearing space.

12. (*Previously Presented*) The hard disk drive according to claim 10, in which the amount of said lubricating oil is in a range of 4-25% by volume of the bearing space.

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13. *(Previously Presented)* The hard disk drive according to claim 10, in which said lubricating oil is preliminarily contained in said cage.

CJ 14. *(Previously Presented)* The hard disk drive according to claim 13, in which an amount of said lubricating oil preliminary contained in said cage is in a range of 0.1-80% by weight of said cage.

BLW 15. *(Previously Presented)* The hard disk drive according to claim 14, in which the amount of said lubricating oil preliminary contained in said cage is in a range of 10-70% by weight of said cage.

16. *(Previously Presented)* The hard disk drive according to claim 15, in which the amount of said lubricating oil preliminary contained in said cage is not more than 40% by weight of said cage.

17. *(Currently Amended)* The hard disk drive according to claim 10, wherein ~~a predetermined amount of~~ said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricating oil is prevented from adhering to an external portion of the rolling bearing.

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CJ

18. (*Previously Presented*) A rolling bearing for a hard disk drive comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer ring;
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
a lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space.

B1

19. (*Previously Presented*) A rolling bearing for a hard disk drive comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer ring;
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and
a lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to

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50% by volume of the bearing space, and wherein the kinematic viscosity of the lubricating oil is not more than 400mm²/s.

CJS
SP

20. (*Previously Presented*) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

BJ

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a lubricating oil confined to a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space.

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21. (*Previously Presented*) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a lubricating oil injected into a bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space, wherein said lubricating oil is preliminarily contained in said cage.

B1
C1

22. (*Previously Presented*) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

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23. *(Previously Presented)* A rolling bearing for a hard disk drive comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer ring;
a resin cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring
and said outer ring and disposed opposite to each other; and
a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space
defined between said sealing members at the both ends in the axial direction, wherein the amount
of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and
wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least
20% by weight of the base oils.

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24. (*Previously Presented*) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

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25. (*Previously Presented*) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least 20% by weight of the base oils.